

VENTURES WITH VISICALC

BY CRAIG STINSON

If you're an ardent *VisiCalc* user, you've probably heard by now: there are some fancy new kids on the block. Personal Software has finally upgraded its celebrated number cruncher to DOS 3.3, and, more or less at the same time, the company has also released a small armada of related business software. The new line-up includes *VisiPlot*, *VisiTrend*, *VisiDex*, and *VisiTerm*, as well as the venerable *VisiCalc* itself.

VisiPlot takes data from *VisiCalc*—or any other source—and converts it to graphic display; *VisiTrend* manipulates the data in various ways and performs statistical analysis upon it. *VisiDex* is a cross-referencing electronic index card program, and *VisiTerm* is a communications package.

In this month's column we will review the first four new products. A review of *VisiTerm* will follow next month.

Besides compatibility with DOS 3.3, there are two other major areas of improvement in the new *VisiCalc*. First, there's a new storage format that eases the transfer of data from *VisiCalc* to other programs (or from other sources to *VisiCalc*); second, *VisiCalc* now includes a number of conditional and logical operations that were missing before.

What's the DIF? The new filing option is called Data Inter-

change Format (DIF). Here's how it works. When you save via DIF you set your cursor at the upper left corner and specify the lower right corner of the area you want filed. You don't have to save the whole work sheet.

The program sends your data to disk either row by row or column by column, according to your choice. Which you choose will depend on what you want to do with your data later on. Each column or row, depending on which way you save, will be treated as a separate series of data points for the purpose of plotting or analysis by *VisiPlot* or *VisiTrend*.

The DIF procedure stores only sequences of numbers and labels. Formulas, formats, and the original *VisiCalc* coordinates all get left behind. Numbers are filed in full precision, although, if you don't want all those decimal places, you can round off before filing.

DIF is intended to facilitate transfer of data from one application to another. For temporary storage of a *VisiCalc* work sheet in progress, you probably wouldn't want to use this option, because reloading the DIF file would require re-creating all those formulas and formats.

There are some situations, however, in which it might be

useful to reload a DIF file onto a *VisiCalc* work sheet. For one thing, when you load, you get the same column-versus-row choice. So, if you have any reason to, you can reorganize data from columns into rows, or vice versa, using DIF.

More importantly, DIF data can be brought back to any part of the *VisiCalc* work sheet. So, for example, if you had several people in the field gathering and storing data via *VisiCalc*, you could consolidate their input on a master work sheet, and the master could both summate the individual input and display it separately.

Until now, Apple *VisiCalc* work sheets could be overlaid, but any data you wanted to juxtapose in the overlay had to come from distinct coordinates to begin with—which required hassle upfront.

The DIF feature permits the integration not only of one function with another—*VisiCalculating* with *VisiPlotting*, for example—but also of one *VisiCalc* application with another.

New Conditions. The other major improvement in the updated *VisiCalc* is the inclusion of conditional operators. There's now a function called @CHOOSE that works like an On...Goto statement in Applesoft. @CHOOSE (E7,10,-8.98,F2) first looks at coordinate E7; if that location holds the number 1, the function returns the value 10; if E7 holds a 4, the function yields the value held by F2, and so on. The function only works, of course, if the possible values at E7 are consecutive positive integers.

Other kinds of conditional branching can be brought about through the use of Boolean operators. Now you can plug in a formula like A1/A2 < A3 at a given coordinate, say A4. The formula will yield true, false, error, or NA (the last case if you're holding A1, A2, or A3 open for data to come). Then, at another coordinate, you can apply an if...then...else type of branch. The function @IF (A4, 100,200) looks for a Boolean value at A4; if that value is true, the function returns 100; if false, 200. The first field has to be a coordinate location holding either true or false; the second and third fields can be anything.

So now you can put extensive alternate scenarios into distant, unrelated sections of a *VisiCalc* work sheet and summon results from different corners using the conditional operators. *VisiCalc*'s range of uses have taken on new dimensions of complexity.

Two other changes are important. First, the new *VisiCalc* will run on either 3.2 or 3.3 systems. If you don't want to Muffin over your old 3.2 data files, you just throw in the Basics disk before booting *VisiCalc*. Second, the program now takes advantage of the extra memory provided by the language system. The *VisiCalc* is larger than the old one, so if you don't have the language system, you'll find yourself with a little less available workspace in RAM. If you do have the language system, you'll come out slightly ahead.

Plotting against VisiCalc. Of the other new products from Personal Software, the most natural companion to and extension of *VisiCalc* is the *VisiPlot/VisiTrend* package. *VisiPlot* is available as either a stand-alone or as part of the *Trend* composite, so we'll consider it first.

The first thing one is apt to notice when booting up *VisiPlot* (or *VisiTrend*) is a comfortably familiar style. Wherever possible, the outward appearance and manner of *VisiCalc* have been preserved. Communication with the user is via a status area, commands are preceded with the slash key, and the program is menu-driven throughout.

Although it will process any numerical data you care to feed it, *VisiPlot* has been designed to use DIF files created by *VisiCalc*. When you transfer a full or partial work sheet from *VisiCalc* to *VisiPlot* by way of DIF, each row or column depending on how you saved the work sheet, becomes a single plottable set of data points. The entire DIF file goes on disk as one unit, with each row or column a subunit. The program uses the term file to designate the overall structure and series for the subunits. Up to sixteen series, or a maximum of 645 data points, may be loaded into memory at one time; if the *VisiCalc* sheet you're saving exceeds those limits, you'll need to break it up.

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Applied to DIF data or not, *VisiPlot*'s file and series approach makes sense, because it allows you to load or save a lot of related information all at once. With eight or ten or sixteen data series in memory at the same time, you can overlay several graphs—up to a maximum 150 data points—for quick and easy comparison.

The kinds of graphs *VisiPlot* offers include line charts, area charts, bar graphs, pies, high-low plots, and scatter plots.

The line chart option draws simple graphs with points connected by straight lines. Up to three can be displayed simultaneously, with the data points of each series marked by different symbols and a legend provided below. The program will actually display as many line plots as you want, up to the maximum 150 data points, but it has distinct symbols for only three series.

Bars to the Left, Bars to the Right. The area chart is simply a line graph with the area between the line and the x axis shaded in.

Bar graph bars come in three styles: normal, left, and right; the left and right afford side-by-side comparison of two data series. Bars can be open, shaded, or hatched, allowing easy distinction in side-by-side overlays. You can also combine two bar graphs in an over-and-under fashion, to illustrate, for example, growth in various categories from one year to the next.

The high-low and scatter charts require two data series over a common range. The high-low is useful for something like tracking high and low stock prices per day for a given stock; on this graph, you could also overlay a line chart of the closing prices. The scatter plot puts one series on the y axis and the other on the x axis and marks all points of coincidence; it's useful for demonstrating the presence and manner of correlation between two series of data.

The different kinds of graphs can be combined in various ways—such as a line over a bar graph or a line over an area chart. Using the window option, the hi-res screen can also be split in half—vertically or horizontally—to display two entirely separate minigraphs at the same time.

Titles come in boldface or regular type. The program provides up to three lines of legend and an unlimited number of labels that you can move around on the graph. These movable titles can be displayed either normally or in inverse video.

Aside from the normal editing functions of changing, adding and deleting data, *VisiPlot* can also interpolate any number of values between two existing points. It can even drop in any specified number of points in an arithmetic or geometric series of your own devising.

Additional features include color control of both data display and background and the option to include horizontal and/or vertical grid lines. You can also restrict the range along either axis, making it possible to zoom in on a particular area of your data. If you alter a scale so that some of your points are off the screen, the program politely tells you you've done so and asks for confirmation. Then it displays what it can.

VisiPlot graphs can be printed on the Silentype, Trendcom 200, Paper Tiger 440 and 445, or the graphics-equipped NEC Spinwriter 5510, 5515, 5520, and 5525. Hi-res images can also be saved as such on disk and incorporated into your own programs.

Taking Care of Business. *VisiPlot* is intended for business use. All the various graph formats expect to see dates along the x axis. That's nifty for most business applications. If your data is monthly, the program will even drop in initials for the appropriate months. On the other hand, if you're going to plot pH against milliliters of titrate, you'll find *VisiPlot* a touch clumsy.

The only other caveat worth mentioning is the possibility of overkill. For those who do not require or want all that *VisiPlot* provides, the program might be unnecessarily unwieldy. It's too large to fit into memory all at once, and going from the plotting module to the file-handling/editing module can cause some vexing delay.

The same comment holds for the composite of *VisiTrend* and *VisiPlot*. In this package, there are three separate, large modules—the plotter, the trender, and the file-handler/editor. For some reason, the program does not allow direct movement from plot module to trend module; you have to go by way of the file handler, an expedition that may leave you with hands in lap for a minute or more.

That's a trivial annoyance, however, considering the power of the combined *Trend/Plot* package. The *Trend* menu offers three major areas of functionality, under the headings Analyze, Function, and Xform.

Analyze displays several series of data in tabular format—up to the limits imposed by Apple's forty-column output. It also calculates various statistical indices and performs linear multiple regression analyses on as many as five independent variables.

The statistics available include: number of points, minimum and maximum, mean, variance, standard deviation, and the coefficient of correlation between any two series.

The regression analysis is done by the least squares method. Besides constant and coefficients, the program also calculates the T statistic, R-bar squared statistic, corrected R-bar squared statistic, the standard error for the regression and for the coefficients, the sum of the squared residuals, the F statistic, and the Durbin-Watson statistic. The regression analysis also generates two new series of data that can be displayed by the plot program: a fitted series, which uses the calculated constant and coefficients; and a residual series, which shows the difference between actual and fitted data.

The second main division of the menu, Function, manipulates original data to provide more information: options are moving average, single exponential smoothing, percent change, lag, lead, and a running total. The moving average is calculated by the N + 1 method, although the user can choose to convert the results to the N or centered methods.

Each manipulation generates its own ancillary data series, which can be plotted alongside the original data.

In case the choices under Function still don't give you the angle on your data that you want, Xform allows you to define

your own transformation formulas, using up to eighty characters. All Applesoft operators and functions are at your disposal: arithmetic operators, logical operators, comparative operators, trigonometric and logarithmic functions, and miscellaneous functions like INT, RND, and SQR. Among other things, Xform lets you do the equivalent of plotting a second or higher-order function on log paper. Using the EXP function, you can also make higher-order data available for linear multiple regression analysis.

All Hands on Dex. Turning now from complexity to artful simplicity, *VisiDex* is a freeform data storage and retrieval program. The basic unit of storage is a forty-column by twenty-line index card, filed under user-specified keywords or dates. Within this simple, flexible format, *VisiDex* offers myriad search, sort, print, and calendar options for myriad potential uses.

Like *VisiPlot* and *VisiTrend*, *VisiDex* employs a code structure and status display that will provide fond remembrance of *VisiCalc*. When you've finished creating a data card, for example, you hit /K for keyword and designate one or many words, numbers, or phrases that will become index entries for subsequent retrieval of the card. Up to eighty characters may be used in keywords for any given card. The current date—or any other—can also be used as a keyword, a feature that permits the use of *VisiDex* as an appointment book and as a file cabinet. If you have a clock from Mountain Computer or California Computer Services, *VisiDex* will handle date functions automatically. Otherwise, you just tell it the date when you boot up.

Keywords don't have to be part of the screen's contents. Designating a keyword that doesn't actually appear on the screen could be handy at print time. You could, for example, file a bunch of names and telephone numbers, all under the keyword phone; you could then print all the cards stored under that heading, without having to print the keyword itself with each entry.

Another way to accomplish this would be to put the keyword on the screen in inverse video; the program gives you the option of ignoring inverted material on the printout.

For that matter, you could put the keywords near the bottom of your index cards and tell the program to print only the top five or ten lines. The print routine defaults to twenty-two lines per card, which leaves two line spaces between each, if you fill the cards, and makes for an even three per form on fan-fold paper. But of course, you can override the default value.

Other data entry and editing features include five fixed tab stops, flashing display, a stack-oriented line delete and insert that allows you to move whole lines around on the screen, and word wraparound. The program also supports the Dan Paymar lower-case adaptor, but only with the optional shift-key modification. Without the shift-key mod, the Paymar chip is of no avail.

Besides the freeform approach to data storage, *VisiDex* also offers the option of defining and laying out recurrent data fields. You can set up a template card with fields for, say, name, address, phone number, age, income, or whatever. Then, anytime you want to create a card with those fields, you just call up the template—by its own keyword, of course. The predefined fields on the template draw the cursor, saving keystrokes, and if you put them in inverse, they can be included or excluded at print time.

Data retrieval can be accomplished either by way of keywords or by literal portions of screen text. The keywords, of course, bring it back a whole lot quicker, since the program only has to scan an index; when you hit /KG (get keyword), the disk starts to spin even before you type the keyword. Once you've typed it, retrieval is practically immediate.

In case you forget how you've spelled a keyword, there are two kinds of wildcards at your disposal. The asterisk can stand for single characters, the hyphen for any number of characters.

There's also an option to review the entire index of keywords. The program presents them in alphabetic order and

shows you how many cards you've stored under each keyword.

Since the program knows how to sort alphabetically, you can, if you like, devote an entire data disk to a single purpose, such as mail or phone list. If all your keywords are surnames, you can ask for a sorted print and have *VisiDex* run off your entire list—or any segment of it—in alphabetic order.

You can search for numbers in screen text using relational or comparative symbols like greater than or less than. For example, an agency that solicits contributions could establish a list of donors and selectively recall those who had contributed within a particular range, and so on. The program will ignore dollar signs, commas, and decimals during a numeric search.

The Dating Game. The calendar features allow you to make dated reminders to yourself. When you use a date as a keyword, the system also asks you to specify a warning period—between zero and fifteen days. Then whenever you boot *VisiDex*, the program starts by reminding you of any current messages. You can also ask *VisiDex* to display the reminder at various regular intervals—weekly, monthly by date, or monthly by weekday.

The system also displays or prints on command the calendar for any month in the twentieth century with brackets around any date for which there's a reminder stored on disk. Or you can get it to display or print a daily, weekly, or monthly schedule of stored reminders.

Unlike *VisiCalc*, *VisiPlot*, and *VisiTrend*, *VisiDex* does not use or create DIF files. It does, however, provide the option of printing a text file to disk, in the manner of *VisiCalc*'s /PD command. The text file thus created can, of course, be incorporated into other programs.

VisiCalc is by Dan Bricklin and Bob Frankston; the price is \$199.95. *VisiPlot*, as a stand-alone, sells for \$179.95; the price with *VisiTrend* is \$259.95. Both programs are by Mitchell Kapor. *VisiDex*, by Peter Jennings, retails for \$199.95.

All four programs require 48K and a disk drive. *Plot* and *Trend* need Applesoft as well.



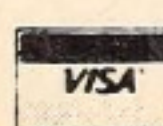
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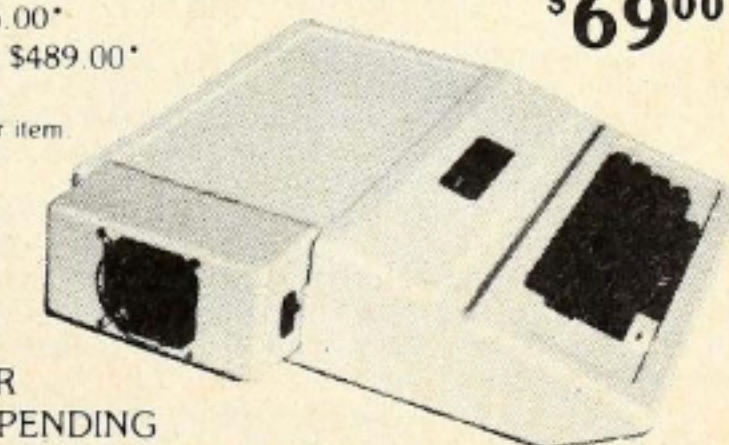
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